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Abstract

The aim of this paper is to compare in an empirical way the male/female wage gap differential between the France and Japan. It is also proposed to explore the reasons why the male/female wage gap is so large in Japan in comparison with France.

We attempt to opt for the Juhn-Murphy-Pierce decomposition method as an analytical tool. This econometric model seemed to be the most suitable tool available for carrying out international wage differential comparisons of this kind.

Both individual characteristics and discriminatory practices against women obviously play a role in shaping the wage gaps between men and women. In this paper, our basic theoretical assumption, however, is that gender differences in human capital result mainly from unequal opportunities in training, promotion criteria, mobility, etc., rather than being a matter of rational individual choice. In this field, public policy therefore can play an important role, not only on the grounds of moral concern for 'social justice' but also in terms of the economic efficiency and demographic vitality of society, which is true particularly for Japan.

Introduction

Although decreasing the gender wage gap is one of the goals set out in the OECD recommendations and equal pay legislation[1] has been introduced to ensure 'equal pay for equal work' in some countries, a significant gap still exists between the hourly pay rates of men and women in many countries. Identifying the various factors responsible for wage differentials is crucial to be able to understand why the gender wage gap has persisted. Finding suitable policy options is also bound to depend on the underlying reasons for the gender wage gap.

From the beginning of the 1980s to the 2000s, a decreasing trend was however observed in the wage gap between men and women in all the OECD countries. Despite many differences between the labour market characteristics and the wage determination mechanisms involved, this trend has been widely observed in all the world's most highly industrialized states. Nevertheless, if we look at this universal tendency in terms of the absolute value of the male/female wage gap differentials, considerable disparities can still be observed in this respect between some industrialised countries (Blau and Kahn 1995).

The aim of this paper is to compare in an empirical way the male/female wage gap differential between the following two countries: France, an industrialized country where the disparities between sexes are outstandingly small, and Japan, where they are particularly large. It is also proposed to explore the reasons why the male/female wage gap is so large in Japan in comparison with France.

We opted here for the Juhn-Murphy-Pierce decomposition method as an analytical tool. This econometric model, which was developed by Juhn, Murphy and Pierce (1991) and subsequently adapted by Blau and Kahn (1992, 1995), seemed to be the most suitable tool available for carrying out international wage differential comparisons of this kind. The main advantage of this method is that it brings to light the effects of visible human capital factors

[1] The first recommendations on these lines were issued by EU in the early1980s, and the law on 'equal opportunity between women and men' was adopted in Japan in 1986.

such as age, years of service, academic background and other statistically measurable factors which affect wage-earning capacities, while at the same time serving to analyze the impact of factors which cannot be defined in statistical terms, such as discriminatory practices against women at the workplace.

From the theoretical point of view, there has been much controversy between supply-side and demand-side theories on this topic. In fact, much of the debate on the gender wage gap has centred on the extent to which women's lower earnings reflect lower levels of productivity or human capital such as education, training, work commitment, or whether they may be due to discriminatory practices such as unequal access to jobs and promotion and the downgrading of women's skills. From the human capital perspective, it has been argued that women's current or future involvement in family duties means that they will invest less in improving their skills and tend to work part-time or intermittently and thus fail to accumulate similar levels of occupational experience and job tenure to those achieved by men. One key point in human capital theory (Becker 1985, Mincer and Polachek 1974, Polachek 1981) is the idea that these female attitudes are based on rational individual decisions and that any resulting wage inequalities are therefore not proper policy issues.

The proponents of demand-side theories (labour market segmentation theory, labour queue theory etc.) look for the sources of gender wage gaps in the discrimination embedded in institutional structures (educational systems, family strategies, government policies, labour management practices), which is reproduced via the social decisions/attitudes of the actors (employers, trade unions, families etc.) on the labour market. Both direct and indirect forms of discrimination are viewed on these lines as the main factors denying women equal access to jobs, training and promotion opportunities, thus leading to unequal pay. It is also argued that differences in pay between occupations result not only from differences in the productivity and skills of workers or in the demands of the job, but also from the market position, the respective bargaining powers of diverse social groups and traditional patterns of

pay management between jobs. Variations of this type can be decisive on a labour market where men and women tend to be concentrated in different sectors, occupations or establishments.

Both individual characteristics (human capital factors) and discriminatory practices against women obviously play a role in shaping the wage gaps between men and women. In this paper, our basic theoretical assumption, however, is that gender differences in human capital result mainly from unequal opportunities in training, promotion criteria, mobility, etc., rather than being a matter of rational individual choice. In this field, public policy therefore can play an important role, not only on the grounds of moral concern for 'social justice' but also in terms of the economic efficiency and demographic vitality of society.

This paper has been designed as follows. In section 1, we begin by comparing the general features of labour markets in Japan and France. When it comes to the gender wage gaps, it is necessary to take the general structure of wages and the way the labour markets function in each country into account. Based on this comparative description, we will then propose some hypotheses, which will subsequently be tested. In section 2, the econometric method used here, the Juhn-Murphy-Pierce decomposition method, will be presented in detail. In section 3, concrete analysis will be carried out on individual micro data collected in Japan and France. Decomposion analysis is carried out in order to identify the types of factors mainly responsible for the the gender wage gap differentials between the two countries. Factor decomposition analysis focusing on full-time workers provides the first model. In the second model, occasional part-time workers are introduced into the model. We will then carry out a specific analysis on the male/female wage gap differential between France and Japan in three age groups corresponding to the various phases in the female life cycle. We shall conclude by summarising the most significant results obtained and attempting to deduce some positive policy implications.

Ⅰ－‘Internal labour market’ and forms of hierarchy in France and Japan

As stated above, the gender wage gap has been narrowing in Japan during the past decade (Hori 1998). Yet the speed of this movement seems to be rather slow in comparison with many other advanced countries, such as the Scandinavian countries. Consequently, the male/female wage gap in Japan is still very large in statistically non-adjusted terms.

The average female wage in Japan amounts to only 58% of the average male wage (on the basis of regular full time workers), while this figure reaches about 75% in France by the mid-1990’s.

There obviously exist many economic, social and cultural factors contributing to the large wage gap occurring in the case of Japan. The aim of the present analysis is to distinguish some observable and non-observable factors, focusing mainly on labour management practices and policy at the firm level. In a way, France is viewed here as a reference country with which the Japanese practices are compared.

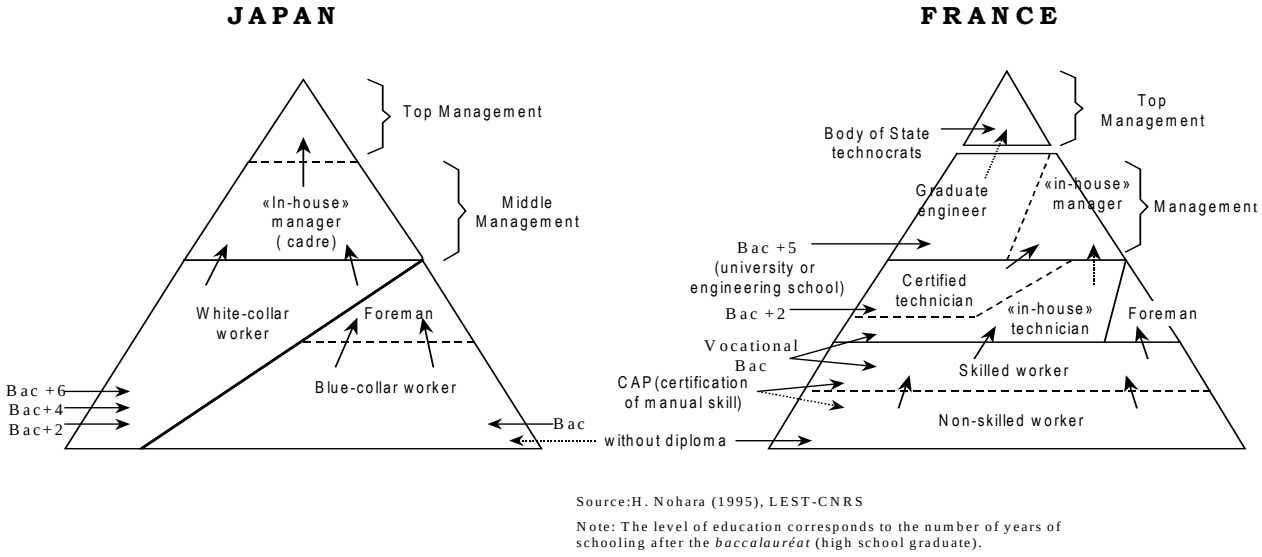
(1) Construction of hierarchies in Japan and France

From the viewpoint of traditional labour market issues, both Japan and France are generally regarded as typical countries having developed a strong, highly organised ‘internal labour market’ (Doeringer and Piore 1971). Needless to say, the labour market in Japan is reputed for its ‘long-term employment system’ where employees spend a large part of their career working for a single company or a single industrial group. In France too, many large companies set up a typically French internal labour market, providing their workers with in-house training, internal promotion opportunities and a seniority-based wage system. The overall features of these ‘organised labour markets’ in France and Japan therefore look quite similar, at least in terms of their incentive systems.

However, although France and Japan have basically similar labour institutions based on the ‘internal labour market’, it should be pointed out that the structure of the internal labour markets differs greatly between these two countries. In particular, the way in which

hierarchies are set up or embedded in the internal labour market seems to differ considerably. This is an extremely important point, as far as the gender wage gap is concerned.

Some evidence has been obtained in comparative studies (Nohara 1998, Nohara 2000) that allocation of positions, career paths, mobility chains and wage systems are set up in a quite differently at Japanese and French firms.



Source:H. Nohara (1995), LEST-CNRS

Note: The level of education corresponds to the number of years of schooling after the *baccalauréat* (high school graduate).

Figure I Types of the Internal Labour Market: Japanese Type and French Type

Figure I sums up the most distinctive features of the Japanese-type and French-type hierarchies.

In the French case, there is a strict correspondence between diploma levels (formal qualifications), occupational categories and ports of entry into the internal labour market. Qualified blue-collar workers generally have CAP certificates. Non-skilled workers have no formal diplomas. The intermediate level technicians and clerks have a Baccalaureate, sometimes followed by 2 years' schooling in the further education system. The 'cadres' or managers –the top management category– have graduated from Grandes Ecoles (the elite

Engineering or Business schools) or after taking five-year University courses. From the very beginning, these employees are treated very differently in terms of tasks, job responsibilities and wage levels. Cadres are managers who enjoy a high status as soon as they graduate from the Grandes Ecoles, which gives them both a great deal of professional autonomy and a high salary. Their starting wages at the age of 20-24 are twice as high as those of manual workers of the same age and equal to those of the most highly-paid technicians. In addition, their wage profile continues to increase for a long time, peaking only when they are aged between 50 and 54. A pay scale of this kind constitutes a real incentive mechanism.

The French incentive system consists, however, of organising career paths between these occupational category boundaries. Some semi-skilled workers are promoted as the result of seniority or in-house training to the position of skilled workers. There also exist managers who have been promoted from the rank and file. In this case, they know about the enormous difference which exists between pay scales. The Japanese hierarchy or 'internal labour market' has some distinctive features which clearly differentiate it from its French counterparts. In terms of the occupational category, there is a firmly set boundary between white-collar and blue-collar workers in Japan. Contrary to what happens in France, this boundary is quite rigid and impermeable. Few blue-collar workers can move to white-collar positions in the course of their working lives. Contrary to their French counterparts, however, they are not subdivided into non-skilled, semi-skilled or skilled workers, and little distinction is made between technicians and engineers.

Unlike French diplomas, Japanese diplomas do not guarantee a strict correspondence between skill levels and starting posts or tasks. For example, all young University graduates, regardless of the levels attained, go to starting jobs ranked at the bottom of the organizational hierarchy. Their starting wages are correspondingly low and generally situated at the same level as the wages of young blue-collar workers. University graduates are all faced with similar career prospects at first, and must spend at least ten years as rank and file white-collar

workers until reaching their first managerial posts, contrary to what happens in France, where the various occupational categories each have their own wage scale and profile, all categories of employees in Japan are entitled to the same pay system and are often covered by a collective agreement based on a single-status clause.

Japanese University graduates' salaries therefore start at the lowest level available on the whole labour market. This dissociation between formal qualifications and pay, which is specific to Japan, runs counter to the teachings of the 'signalling' and 'adverse selection' theories (Spence 1972). In addition, these employees' pay levels are always lower than those of experienced manual workers until they are about 35 years of age. This slow rate of progress up the pay scale, which from a European point of view seems to offer little by way of incentive, is accepted by young graduates although they are aware that it does not always encourage risk-taking or creativity. Nevertheless, the wage profile for non-manual workers does eventually diverge from that for manual workers. From the age of 35-40 onwards, it begins to accelerate, eventually reaching a peak that corresponds to more than twice the pay of manual workers. As a result, managers at the end of their careers acquire professional recognition and legitimation thanks to the hierarchical ascension they have achieved.

(2) Formulation of hypotheses

These differences in the way in which the hierarchy is constructed seem to have a great impact on the formation of the gender wage gap in each country. Based on these distinctive features, some working hypothesis can be formulated, which will be subsequently tested using the econometric method selected.

i) The long career path to the Japanese manager's position is not favourable to women, since many young women quit their jobs after working for ten to twenty years to get married, and especially to have children. Many women's careers are therefore restricted to the poorly paid initial period, and they tend to lose the opportunity of being promoted to higher managerial positions.

ii) In the case of France, the correspondence between diplomas and jobs, which corresponds to the social standardization of skills, tends to result in relatively equal wages between female and male workers, while at the same time facilitating the mobility between enterprises of both sexes.

iii) Active national intervention policies in favour of childcare enable French women to continue working, although they often make a few breaks because of family events. Japanese women are not yet sufficiently supported by the State, although options such as 'parental leave' etc. are beginning to become available. Social facilities supporting female workers by creating conditions enabling them to continue their careers at firms and sustaining female wages - which depend on seniority - are available in France, but not in Japan.

iv) Gaining access for the first time to the internal labour market (school to work transition) tends to be more difficult for young workers in France than in Japan, except for the young people with the highest diplomas, such as engineers. Japanese companies seem to be more open to young workers, regardless of gender. During the first period of working life, the gender variable seems to play a less important role in Japan than in France. In other words, the male/female wage gap might be less pronounced during this period in Japan than in France.

v) The internal labour market in Japan is closed to middle aged people. Generally, Japanese workers who leave their jobs in mid-career have little chance of finding another job of the same kind. They tend to be geared towards the secondary labour market. Most Japanese women also return to the labour market after the childcare period, but they are forced to take flexible, short-term jobs on the secondary labour market, particularly in the service sectors. In France, married women are faced with a similar situation, but their disadvantages are somewhat attenuated by French State intervention, the high minimum wage levels and the social standardization of occupational/educational certification.

Ⅱ－Analytical decomposition of factors responsible for the male/female wage gap differential between Japan and France

(1) Formulation of a model

In this section, we will look at the reasons why the male/female wage gap differential between Japan and France reaches such a high level. In the first place, we give the following equation based on the approach developed by Juhn, Murphy and Pierce (1991).

Wage equations for males and females can be defined respectively as follows:

$$\ln W_m = X_m \beta_m + V_m \qquad \cdots (1)$$
$$\ln W_f = X_f \beta_f + V_f \qquad \cdots (2)$$

where W denotes the hourly wage, X stands for explanatory variables affecting wages such as age, years of tenure with the current employer, and educational background. β is a coefficient vector. V is an error term having mean value 0 and variance σ. Subscripts m and f stand for male and female, respectively.

The error term can be redefined as follows, using male coefficients β_m:

$$U_m = \ln W_m - X_m \beta_m = V_m \qquad \cdots (3)$$
$$\begin{aligned} U_f &= \ln W_f - X_f \beta_m \\ &= X_f \beta_f + V_f - X_f \beta_m \\ &= X_f (\beta_f - \beta_m) + V_f \qquad \cdots (4) \end{aligned}$$

If we take D to denote the male/female wage gap expressed as a mean value in a single country, the following decomposition can be performed.

$$\begin{aligned} D &= \overline{\ln W_m} - \overline{\ln W_f} \\ &= (\overline{X_m} - \overline{X_f})\,\beta_m + \overline{X_f}(\beta_m - \beta_f) \\ &= \Delta \overline{X}\,\beta_m - U_f \qquad \cdots (5) \end{aligned}$$

Where

$$\overline{\Delta X} = \overline{X_m} - \overline{X_f}$$

Next, to compare the male/female wage gaps between Japan and France, the following equation can be written, where J stands for Japan, F for France, and D_J and D_F the male-to-female wage gap in each country.

$$D_J - D_F = (\overline{\Delta X_J} - \overline{\Delta X_F})\ \beta_{mJ} + \overline{\Delta X_F}(\beta_{mJ} - \beta_{mF}) - (\overline{U_{fJ}} - \overline{U_{fF}}) \quad \cdots (6)$$

The first term of the right member is a part of the total wage gap differential that is affected by the difference in the women's positions between Japan and France. In other words, it is the gap resulting from statistically observable variables responsible for differences in employment conditions, such as disparities in the age, years of service with the current employer, educational background, opportunities for employment in high wage industries and so on. For example, if the mean value of Japanese women's years of job experience is far smaller than that of French women ceteris paribus, that point will be an important factor accounting for the male/female wage gap differential between Japan and France. The first term of the right member is called the ‘observed X's effect’.

In those cases where there are no male/female disparities in the rates of return to age, education and years of services with the current employer, or in the wage premium on industry and firm size in a country, the second term will be a part affecting the male/female wage gap differential between Japan and France as the result of the difference in the pattern of supply and demand between the two countries. This part is based on the gaps in the statistically observable rates of return to age, years of education and years of tenure and in the wage premium on industries and firm size between these two countries. It is generally known as the ‘observed-prices effect’.

The third term is a part based on the gap in the remainders that cannot be explained in terms of the above-mentioned factors. It is based on the gaps in 'unobserved variables' between Japan and France (for example, sex-related differences in job type or training in the firm) that cannot be accounted for by means of above-mentioned factors.

Equation (1) can be further broken down using the standard error σ of the error term V as follows:

$$\ln W_m = X_m \beta_m + \sigma_m \theta_m \quad \cdots (7)$$

when

$$\theta_m = V_m / \sigma_m \quad \cdots (8)$$

θ_m is a normalized error term having mean value 0 and variance 1. σ_m is an indicator showing the scattering of the remainders.

In the same way, equation (2) can be broken down as follows.

$$\ln W_f = X_f \beta_m + \sigma_m \theta_f \quad \cdots (9)$$

when

$$\theta_f = \{X_f (\beta_f - \beta_m) + V_f\} / \sigma_m \quad \cdots (10)$$

The remainders of the wage function for males and females U_m and U_f can be normalized using σ_m as equations (7) and (9). The aim of this normalization procedure is to account for the gap between France and Japan in terms of statistically unobservable variables affecting women's status.

Equation (5) can be rewritten using equations (7) and (9).

$$D = \overline{\ln W_m} - \overline{\ln W_f}$$

$$= (\bar{X}_m - \bar{X}_f)\,\beta_m + \sigma_m(\bar{\theta}_m - \bar{\theta}_f)$$

$$= \Delta\bar{X}\,\beta_m + \sigma_m\Delta\bar{\theta} \quad \cdots (11)$$

when

$$\Delta\bar{\theta} = (\bar{\theta}_m - \bar{\theta}_f) \quad \cdots (12)$$

Based on equation (11), we can rewrite equation (6) giving the male/female wage gap differentials between Japan and France in terms of mean value(s).

$$D_J - D_F = (\Delta\bar{X}_J - \Delta\bar{X}_F)\beta_{mJ} + \Delta\bar{X}_F(\beta_{mJ} - \beta_{mF})$$

$$+ (\Delta\bar{\theta}_J - \Delta\bar{\theta}_F)\sigma_{mJ} + \Delta\bar{\theta}_F(\sigma_{mJ} - \sigma_{mF}) \quad \cdots (13)$$

As explained above, the first and the second terms of the right member are the ‘observed-X's effect’ and ‘observed-prices effect’ respectively.

The third term is called the ‘gap effect’. It gives the gap between Japan and France in statistically unobservable factors affecting women's status.

Each error term V in the wage function for males and females in both countries is normalized using a standard error σ. For men in both countries, the normalized error terms θ have a common framework with mean value 0 and variance 1. In other words, in the case of men, there are no differences in distribution between the two countries. The normal distribution in the figure shows the distribution of statistically unobservable factors affecting men's status common to both countries.

On the other hand, in the case of women, by standardizing the error terms in the wage function using the men's standard error σ_m, unobserved variables affecting women's status in terms of the mean value can be displayed on the men's distribution of error terms. In addition, since the men’s distribution of error terms is common to both countries, it is possible to

compare unobserved variables affecting women's status in terms of mean values between Japan and France.

$\bar{\theta}_{fF}$ and $\bar{\theta}_{fJ}$ show unobserved variables affecting women's status in terms of the mean values in France and Japan, respectively. In this case, the figure clearly shows that French women's status is higher than that of Japanese women.

Since the third term expressing the gap effect is $(\bar{\Delta\theta}_J - \bar{\Delta\theta}_F)\sigma_{mJ}$, σ_{mJ} is a weight factor, it emerges that

the value of $(\bar{\Delta\theta}_J - \bar{\Delta\theta}_F)$ determines the size of the gap effect. $\bar{\Delta\theta}_J - \bar{\Delta\theta}_F$ equals $(\bar{\theta}_{mJ} - \bar{\theta}_{fJ}) - (\bar{\theta}_{mF} - \bar{\theta}_{fF})$, yet because of the normalization procedure, $\bar{\theta}_{mJ} = \bar{\theta}_{mF} = 0$. Therefore, $\bar{\Delta\theta}_J - \bar{\Delta\theta}_F = \bar{\theta}_{fF} - \bar{\theta}_{fJ}$.

The gap effect exactly reflects the gap between Japan and France in statistically unobservable variables affecting women's status.

The gap effect obviously increases as the gap between $\bar{\theta}_{fF}$ and $\bar{\theta}_{fJ}$ increases.

To be more specific, the gap effect is taken to be the results from the difference between the two countries in prejudice against women, male/female job type differentials, male/female gap in training opportunities at the firm, unfair job assessment procedures and male/female gap in promotion criteria etc.

The fourth term is called ‘unobserved prices effect’. Among the wage function error terms estimated separately for males and females (statistically unobservable factors), the ‘unobserved prices effect’ is a part that shows female variations in the error term attached to that of males. It contains a part which is common to both genders, involving rate of return variations in statistically unobservable factors. For example, promotion has a profound effect on personal wages, and information of this kind is generally hard to acquire. The gap between Japan and France in the wage premium resulting from promotion is taken to be one of the factors contributing to the unobserved prices effect.

The first and third terms together are called ‘gender-specific effects’. They are parts

resulting from the gap between Japan and France in women's relative overall status, as given by both statistically observable and unobservable factors. Likewise, the second and fourth terms together are called ‘wage-structure effects’. They are parts that can be explained by the gap between Japan and France in the statistically observable and unobservable rates of return.

(2) Nature of data and wage function

a) Explanation of data and technical adjustments

i) Data sources

The Japanese data referred to here originate from the ‘basic survey on wage structure’ collected by the Japanese Ministry of Labour (the present Ministry of Health, Labour and Welfare) in 1994. This is a large-scale annual survey, in which a large body of information is collected about the earnings and the characteristics of establishments and individual workers. The sample size is 1,319,726 persons. The establishments surveyed in both countries are all those with five or more employees, although French survey includes the category of establishments having only one or more employees.

The Japanese survey contains information about monthly earnings for the month of June (before taxes), the amount of extra income including bonuses and end-of-term allowances paid in the previous year (1993), the total number of working hours completed during the month of June, the educational background of the employees, and the number of years of tenure, for example. It also contains some information about the number of regular employees hired by firms and establishments[2], industrial sectors, regions and so on. The survey also provides information about the employees' occupations, but it tends to focus mainly on the blue-collar occupations. The basic population covered by this survey consisted of all establishments with 5 or more employees in nine of the main industrial branches. The

[2] ‘Full-time workers’ refers to (1) workers hired for indefinite periods of time; (2) workers hired for set periods of time exceeding one month; and (3) workers hired for set periods of time within one month or workers hired on a day-to-day basis. In each of these cases, the workers were hired by the companies for a period of 18 days or more in April and May of the year under consideration.

sampling method used was a stratified 2-stage sampling method, where the establishments were the primary sampling unit, while the employees were the secondary sampling unit.

On the other hand, the French data is based on the 'wage structure survey' carried out in 1992 by the Institut National de la Statistique et des Etudes Economiques (INSEE). This survey has been carried out at irregular intervals in France after the EEC-driven (EUROSTAT) 'wage structure survey' started in 1966. Like the Japanese survey, this survey also focuses mainly on the establishments. The sampling method used here was a stratified 2-stage sampling method in which the establishments were the primary sampling unit, while the employees were the secondary sampling unit. The data were collected directly from each establishment's pay register. Similar methods of information collection were used to those on which the Japanese 'basic survey on wage structure' was based. The French survey targeted approximately 20,000 establishments, and the total number of employees covered amounted to roughly 130,000 persons.

The French survey explored a large rang of employees' personal attributes at the target establishments, such as annual earnings, annual number of working hours, educational background and years of tenure, besides the employees' family composition, the earnings of family members other than the employee, the non-wage income of the household, and the employee's occupation. Questions were also asked about the work conditions, the nature of collective agreements and the labour costs at the establishment. In addition, the survey on 1992 (conducted in 1993) contained for the first time information about the personal educational background (diplomas). In this respect, the data on 1992 are extremely useful, since they make it possible to estimate wage functions by bringing the formal diploma levels (the main human capital indicator) into our analysis and to compare the results with the Japanese wage functions.

ii) Some technical adjustments

The main employees targeted in this analysis were the regular employees hired with an open-ended, long-term contract.

The wage in France is defined as the 'hourly wage' obtained by dividing the annual

earnings by the number of working hours. The French definition of annual earnings for regular employees includes overtime pay and bonuses.

In the case of Japan, the 'hourly wage' is calculated as follows: first, the 'scheduled monthly earnings (including overtime pay)' is multiplied by 12 (months), and any 'special annual bonuses' are then added. However, since the data on the previous year's bonuses are not known for employees with less than one year of tenure, the bonus figures are not included. We were obliged to eliminate from our calculations any employees working less than one year in both Japan and France.

In addition, some technical problems remain to be solved which might bias our wage function estimates: i) since we obtained no firm-scale data in the French survey, firm-scale effects were replaced by establishment-scale dummy variables: a classification of establishment-scale dummy variables will be presented below. ii) Due to the differences between the educational systems of Japan and France (Nohara 1992, Mitani 1998), it was necessary to adjust the academic diploma categories in order to render them comparable: we therefore adapted the French educational system to the Japanese system. Consequently, the educational variable was classified in the following four categories: graduates of junior high schools, graduates of senior high schools (Baccalauréat), graduates of junior colleges and higher vocational training schools (two years in tertiary education), and University graduates (having completed university study courses lasting at least 4 years).

The industry dummy variable was added to control the sectoral premium in the estimation of wage function. This variable refers to the Japanese industrial classification: the French one is adjusted to match the standard Japanese system of classification (Two-Digit Industries).

As far as the geographical distribution is concerned, regional dummy variables were created on the basis of Tokyo and Paris and used as the omitted categories, respectively.

Lastly, there was a time lag of one year between the Japanese and French data. It would obviously have been preferable to use data collected the same year in both countries.

However, since the wage structure changes very little during such a short period, we assumed that it was not prejudicial to carry out these comparisons despite the one-year time lag.

b) Formulation of wage function

For the factorial analysis of the gender wage gap differential between Japan and France, we estimated the wage function separately for men and women in both countries. The wage function was defined as follows.

$$\ln W_s = X_s\beta_s + V_s \quad \cdots (14)$$
$$S = m, f$$

Where $\ln W_s$ is the logarithm of the wage per hour obtained by dividing the annual earnings (including extra overtime pay and special bonuses) by the number of working hours.

$\mathbf{X_s}$: -Age

-Square of age

-Years of tenure

-Square of years of tenure

-Educational background variable (senior high school, college or higher professional school, and university (omitted category: junior high school))

-Establishment size variable (establishments with 30-99 persons, 100-499, 500-999, establishments with 1,000 and more (omitted category: establishments with 5-29 employees))

-Industry variable (omitted category: mining)

-Regional variable (Japan: Tohoku, Kanto, Chubu, Kansai, Chugoku, Shikoku, Kyushu (omitted category: Tokyo)) (France: outskirts of Paris, northern area, eastern area, western area, south-western area, eastern and central area, and the Mediterranean area (omitted category: Paris))

$\boldsymbol{\beta_s}$: coefficients

V_s: an error term

m and **f** denote male and female, respectively

III - Results of wage function estimates

(1) Descriptive statistics

Table 2 gives descriptive statistics resulting from the wage function estimates obtained for men and women in Japan and France.

Table 2 Descriptive Statistics

Variables	France Men		France Women		Japan Men		Japan Women	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Age	38.671	9.6088	37.1441	9.806	40.2164	11.84845	36.8215	13.15816
Age^2	1587.78	774.3408	1475.85	777.3752	1757.75	988.343	1528.96	1052.478
Tenure	11.776	9.1529	10.6766	8.4844	13.2087	10.26888	8.1453	7.66602
$Tenure^2$	222.45	290.13	185.9738	254.6583	279.92	358.351	125.11	226.46
Education								
High School	0.1026		0.1592		0.5138	0.49981	0.5688	0.49525
Colleage	0.081		0.1355		0.0624	0.24191	0.2171	0.41226
University	0.0823		0.0538		0.2611	0.43921	0.0699	0.2549
Establishment Size								
30～99 employees	0.2203		0.2389		0.261	0.43919	0.2785	0.44827
100～499 employees	0.2726		0.2683		0.2796	0.44878	0.2949	0.456
500～999 employees	0.1399		0.1122		0.0864	0.28092	0.0724	0.25919
1,000 or more employees	0.1271		0.0955		0.1079	0.31022	0.0608	0.23887
Region								
Region1	0.1885		0.1688		0.1044	0.30576	0.1273	0.33336
Region2	0.0587		0.0481		0.2211	0.415	0.2047	0.40349
Region3	0.119		0.1135		0.1572	0.36397	0.1541	0.36105
Region4	0.1014		0.0951		0.1757	0.3806	0.1596	0.36625
Region5	0.1042		0.1067		0.0597	0.23686	0.0659	0.24811
Region6	0.1268		0.1135		0.0239	0.15279	0.0303	0.17148
Region7	0.0806		0.0764		0.085	0.27893	0.1111	0.31425
Industry excluded from this table								

We can see from the table 2 that the male/female gap in years of tenure is relatively large in Japan. The difference is 5.05 years (13.20 minus 8.15 years) in Japan, while it is only 1.10 years (11.78 minus 10.68 years) in France, which is quite small. The difference in the male/female age distribution gap between Japan and France is also large (3.40 years in Japan versus 1.53 years in France), but its magnitude is not comparable with that of the difference in the tenure variable. And the percentage of employees with University education (Baccalaureate plus at least 4 years at University) is remarkably high among Japanese men (26.1 percent), while this figure is only between 5 and 8 percent among Japanese women and

among French men and women alike.

Table 3 below reflects quite clearly some important differences in wage structure between Japan and France. In the first place, it can be seen that the values of the male/female age premium gap differ considerably between Japan and France. In France, the age premium for men and women is 0.042 and 0.032 respectively; the male/female gap is therefore not significant. On the other hand, the age premium in Japan shows a much larger gap between the sexes (the premium for men is 0.063 while that for women is only 0.032).

As regards the tenure (seniority) variable, the tenure premium for women is higher than for men to some extent in both countries, and yet the gender gap is not significant. The absolute value of the tenure premium for men as well as for women is larger in Japan than in France.

It is noteworthy that the educational background variable was found to be much larger in France than in Japan. If we look at the senior high school, college/higher professional school and University levels, it can be seen that the premium value of each academic level in France is slightly higher than the corresponding value in Japan. For example, the University premium value obtained for men and women in Japan was 0.222 and 0.351, respectively. This means that university-educated employees' wages are 22 percent higher than the wages of employees with junior high school education in the case of men and 35 percent in that of women, assuming all other variables (age, tenure, size of establishment, region etc.) to be equal. On the other hand, the University premium value obtained here for men and women in France amounted to 0.728 and 0.580, respectively, which shows that university-educated male and female employees obtain 73 percent and 58 percent higher wages, respectively than employees with only junior high school education.

The size of establishment plays an important role in forging the wage differentials in Japan, while this variable appears quite neutral in French case. Indeed, big firms pay a non-negligible wage premium both for men and women in Japan. This suggests that ‘conventional’

view of Japanese 'dual labour market' is not incorrect. As we see it later, the impact of this variable 'size of establishment' tend, however, to be limited in the overall wage gap. Seemingly, this variable reflects the difference in distribution of manpower of diverse quality between small and large firms (Hori 1998).

Table 3 Estimated Wage Functions

	France Men		France Women		Japan Men		Japan Women	
Variables	Coefficients	t -value	Coefficients	t -value	Coefficients	t -value	Coefficients	t -value
Constant	3.3206	1144.12	3.4495	552.92	6.097	3058.076	6.497	1137.793
Age	0.042	336.8	0.032	242.12	0.0633	1106.371	0.03194	364.03
Age^2	-0.00039	-256.33	-0.0003193	-196.12	-0.0007294	-1063.332	-0.0004474	-403.742
Tenure	0.00721	120.43	0.00928	130	0.02068	601.851	0.0274	423.346
$Tenure^2$	-0.000011	-6.32	-0.000032	-14.46	-0.00008171	-85.833	-0.00008329	-39.226
Education								
High School	0.2845	567.53	0.1693	341.93	0.08416	349.044	0.132	269.33
Junior Colleage	0.3822	672.91	0.3138	577.32	0.112	275.025	0.229	390.486
University	0.7282	1237.46	0.5804	722.54	0.222	701.385	0.351	477.731
Establishment Size								
30～99 employees	0.0062	14.05	-0.0022	-4.45	0.03591	150.52	0.05632	145.65
100～499 employees	0.0305	67.05	0.0207	41.64	0.09872	405.113	0.133	340.78
500～999 employees	0.0407	72.21	0.0567	85.1	0.156	458.769	0.188	332.903
1,000 or more employees	0.05	82.9	0.042	59.08	0.218	640.712	0.249	400.796
Region								
Region1	-0.177	-361.49	-0.2101	-380.28	-0.202	-599.736	-0.259	-484.84
Region2	-0.2236	-315.92	-0.2231	-260.52	-0.06612	-237.21	-0.106	-226.19
Region3	-0.1595	-287.75	-0.2051	-326.68	-0.07062	-234.758	-0.124	-243.781
Region4	-0.2067	-357.54	-0.2231	-337.29	-0.05307	-181.986	-0.0894	-185.568
Region5	-0.2089	-364.04	-0.2274	-353.86	-0.152	-388.241	-0.21	-322.156
Region6	-0.1616	-300.4	-0.1846	-296.79	-0.193	-341.894	-0.248	-273.887
Region7	-0.1455	-234.73	-0.1758	-246.16	-0.206	-577.078	-0.263	-468.852
Industry excuded from table								

(2) Global analysis of the gender wage gap

Here we tested two different models. The first model was used to estimate the wage function on the basis of all regular full-time workers. The second model includes all employees, whatever their status (full and part-time workers, regular and irregular short-term workers). We start with the first model presentation.

Table 4 gives the results of the analysis corresponding to equation (13), which was set to determine what factors explain the male/female wage gap differentials between Japan and France. The overall difference between the two countries was found to amount to 0.2175 in logarithmic terms.

Table4 Factor Analysis of Japan-France Gap in Male-Female Wage Differentials

	Differences	Percentage(%)
Japan-Farnce Gap in Male-Female Wage Differentials	**0.2175**	**100.0**
Observed X's Effect	**0.1441**	**66.3**
Age	0.0330	15.2
Tenure	0.0723	33.2
Education	0.0250	11.5
Establishment Size	−0.0007	−0.3
Industry	−0.0041	−1.9
Region	0.0185	8.5
Observed-Prices Effect	**0.0063**	**2.9**
Age	−0.0055	−2.5
Tenure	0.0122	5.6
Education	0.0116	5.3
Establishment Size	0.0082	3.8
Industry	−0.0221	−10.2
Region	0.0018	0.8
Gap Effect	**0.1046**	**48.1**
Unobserved-Prices Effect	**−0.0375**	**−17.2**
Gender-Specific Effect	**0.2487**	**114.3**
Wage-Structure Effect	**−0.0312**	**−14.3**

As described above, the gap factors were classified in four groups. Among these factor groups, the influence of ‘observed X's effect’ and ‘gap effect’ were found to be particularly large. According to table 4, ‘Observed X's effect’ explains 66.8 percent, and gap effect explains 48.1 percent of male/female wage gap differential between Japan and France. Only the gender-specific effect, that is the ‘observed X's effect’ plus ‘gap effect’, can explain the major part of the male/female wage gap differential between Japan and France.

On the other hand, the impact of the ‘observed-prices effect’ and the ‘unobserved-prices effect’ was not significant. The ‘unobserved-prices effect’ obtained a negative value, and thus even constitutes a factor reducing male/female wage gap differential between Japan and France.

Among the variables contributing to the ‘X's effect’, which was found to explain roughly two thirds of the male/female wage gap differential between Japan and France, the ‘tenure’ variable is the most influential: this factor accounts for 33.2 percent of the whole gap. This finding indicates that any labour policy measures designed to increase the mean value of women's seniority in Japan will be particularly useful approach to bring the Japanese male/female wage gap up to the level prevailing in France.

After the tenure variable, ‘age’ and ‘educational background’ were the variables having the largest effects on the wage gap in Japan: the influence of age was found to be 15.2

percent, and that of educational background, 11.5 percent. As can be seen from the descriptive statistics given in table 2, the male/female differential in average age is larger in Japan than in France, although it is not as large as the male/female tenure variable differential between the two countries. This means that promoting easier re-entry to the labour market for women who have left it because of childbirth, child care, family nursing and so on could contribute greatly to reducing the male/female differential in Japan. This problem will be examined below in connection with women's re-entry to the labour market and the possibility of stabilising their careers by helping them to sustain their tenure.

As we explained above, the ‘gap effect’ reflects the differential between Japan and France in statistically unobservable factors affecting women's status. This effect explains about half of the whole gap in male/female wage gap differential between Japan and France. The problem is, however, that the ‘gap effect’ cannot be identified concretely because it involves unobservable factors. Nevertheless, a lot of empirical evidence is available that the male/female wage gap differential between Japan and France results largely from discrimination against women in their choice of job, training opportunities, promotion criteria bias and so on.

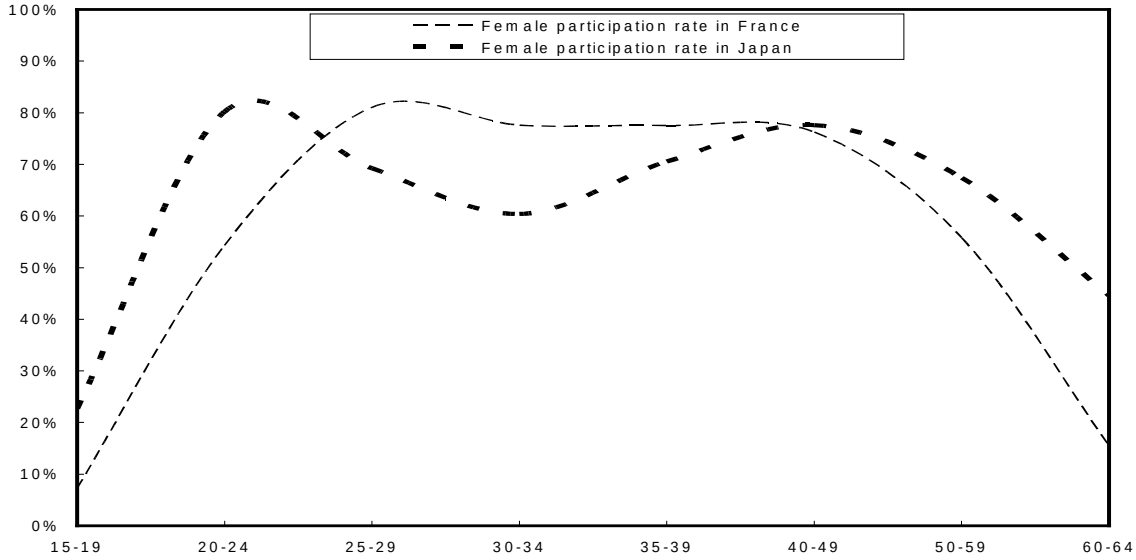
(3) First model analysis (regular full-time workers only) by age groups

Here we tested the first model via distinguishing three age groups. As mentioned at the presentation of the fourth hypothesis, it is vital to take women’s life cycle into account when estimating the gender wage gap. All workers are liable to leave the labour market for some time because of childcare, family care or personal incidents, but this is particularly true in the case of female workers. The loss of human capital during these off-periods has a great impact on women’s wages and by extension, on male/female wage differentials.

Indeed, women’s pattern of work in the course of their lives not only differs from that of men but also differs from one country to other. For example, as shown in figure II, women’s participation rate by age takes a different form depending on the country involved.

In Japan, the profile has a so-called M-shape, with a sharp drop in the participation rate occurring at the age of 30-40, while in France, this profile remains relatively flat, regardless of family events, except during the very first period. These differences mean that women are treated and supported by State, Society and firms, via a specific societal 'convention', in a different manner from one country to another (Nohara 2000).

Figure - II Women's participation ratio by age in Japan and France



Taking these societal effects into account, we applied this model to the following three age groups: the first group consisted of those aged 30 and less, the second group of those aged 30 to 39, and the third group of those aged 40 and more.

Table 5 (in the Appendix) shows the results of decomposition analysis based on wage function (13) for men and women, targeting only the under-30 age group. Interestingly, the results obtained on this age group were quite different from the overall results presented above on the population as a whole. In this age group, a very large part of the male/female wage differential between Japan and France can be accounted for by the observed X's effect, that is, by statistically observable explanatory variables. The fact that the level of wage disparity between Japanese men and women in the under-30 age group is practically equal to the French level greatly reduces the overall wage gap between the two countries.

Upon examining the observed-X's effect more closely, three factors were found to affect the gender wage gap in Japan: academic background (accounting for 36.8%), age (accounting for 35.2%) and years of service in the company (accounting for 25.5%).

As far as the academic background variable is concerned, France is characterized by the fact that there is no gap in the rates of university graduation between men and women, while the overall college graduation rates are lower than in Japan. Another French trait worth noting is the relatively high rate of middle school graduates, which include a higher percentage of males than females. By contrast, the rate of college graduates is relatively high in Japan, but shows a wider gap between men and women. Lastly, women achieve higher high school and junior college graduation rates in Japan than in France.

In terms of diplomas distribution, the percentage of young people with further educational qualifications is relatively high in Japan, although some gaps between men and women subsist. This fact contributes to generating the relatively smaller male/female wage disparities which exist in Japan, in comparison with France.

When it comes to examining the influence of the 'observable price effect', the impact of diplomas is a major factor here as well: it actually explains 43% of the male/female wage gap differential between Japan and France. Differences in the supply and demand structure of the labour markets in Japan and France can also generate gaps in the earning rates. This leads to 'observed-price effects' increasing the male/female wage gap differential between Japan and France. A further break-down on the 'price effects' of academic background showed the explanatory power of graduation from junior college, technical college and high school to be even larger[3]. Assuming the existence of parity between the returns of educational investment in Japan and France, a large decrease might be expected to occur in the male/female wage gap

3 In the results of the analysis on the younger (under-30) age group, the explanatory percentage corresponding to academic background (observed-price effects) was 42.9%. Taking the effects of overall academic background (observed-price effects) to be equal to 100%, the breakdown of the explanatory power gives 48.9% for high school graduates, 52.8% for junior college/technical college graduates and minus 1.7% for college graduates.

differential between the two countries in the under-30 age group[4].

The table 6 (in the Appendix) indicates the results of decomposition analysis targeting the 30-39 age group. The empirical findings on workers in their 30s differ slightly from those obtained on the under-30 age group. The overall wage gap in absolute terms between France and Japan is here three-fold large and reaches an extremely high level at this age group, compared with the previous group. Factors corresponding to unobservable differences in women's status between the two countries, and resulting from highly discriminatory practices at the workplace were found to have a particularly strong impact. These 'gap effect' factors alone explain 95% of the total gap between France and Japan. Since the 'gap effect' is not based on statistically observable factors, it is extremely difficult to set clear policy targets for this age group with a view to eliminating gender-related wage discrimination in Japan. The observed-X's effect also accounts for 30% of the explanatory power. In this case, tenure and academic background factors appear to be the two variables with the greatest explanatory power; whereas the observed and unobserved price effects turn out to have negative effects, and can thus be said to be factors responsible for decreasing the wage gap between the two countries.

Table 7 (in the Appendix) shows the results obtained on the 40-year plus age group. The impact of the gap effect is as strong in this group as it was in the 30-39 age group and accounts for around 70% of the explanatory power. The observed-X's effect, while not having a comparable level of explanatory power to that of the gap effect, nevertheless has a major effect, since it accounts for more than 50% of the total explanatory power. Among the variables which come under this heading, that with the largest explanatory power is the number of years of service (tenure) in the company, which accounts for just under 30% of the

[4] If we look at the return rates versus academic background in the two countries, the return rate of high school graduates is 0.172 in France and 0.052 in Japan. The return rates of junior and technical college graduates are 0.276 in France and 0.072 in Japan. In both cases, the return rates are considerably higher in France. In addition, in the case of high school and junior college graduates, since the weighted ΔX_F value is a minus value, the gap in the wage differential between the two countries narrows as the absolute value of the gap in return rates decreases between Japan and France (in other words, as the disparity between the return rates in the two countries decreases, see equation 13).

whole gap.

Finally, from the results of our age-group decomposition analysis on regular full-time workers, some interesting conclusions can be drawn:

- Variables generating the male/female wage gap differential between Japan and France vary widely from one age group to another. In the case of the youngest (under-30) age group studied here, the gaps between the two countries are small and almost insignificant.

- In the case of the 30-39 age group, the impact of the 'gap effect' was found to be extremely large. There seem to exist many social and cultural factors responsible for discrimination against female workers in Japan. As these factors cannot be observed in statistical terms, it is not easy to set up clear-cut policy targets, except by enforcing the equal opportunity legislation and monitoring discriminatory attitudes against women at the workplace. This is not a very easy task for the State.

- As far as the oldest age group (40 and above) studied here is concerned, the gap effect has an even stronger influence on this group than on the 30-39 age group. However, the 'observed-X's effect' was also found to have significant effects, including those of the decisive 'tenure' variable. This suggests that many women who resume their jobs on the secondary labour market after the childcare period lack occupational experience or have lost their human capital, as compared with men, who continue to accumulate skill and experience throughout their careers. There are high political stakes involved in guaranteeing occupational continuity for women and improving their opportunities of re-entry into the market and returning to good jobs (Higuchi 1993, Osawa 1993).

(4) Second model analysis including part-time workers

The next results were obtained by using the second model, which includes both regular full-time workers and part-time workers.

Table 8 (in the Appendix) gives the results of decomposition analysis on male/female wage gap differential between Japan and France, all types of employees combined. The

overall picture is not very different in this case, although women are enormously involved in part time jobs in both countries. Part time jobs account for more than 20 % of all jobs in Japan and France. In spite of this numerical importance of part-timers, which has even been increasing during recent years, the basic pattern of gender segregation is similar in both countries. One significant difference, however, is that when part-time workers are included in the calculation, the explanatory power of the 'observed-X's effect' increases noticeably. In particular, the impact of the 'tenure' variable augments. But this does not fundamentally affect the logics of female discrimination which are already at work. Needless to say, the continuity (or lack of continuity) of Japanese women's careers plays a decisive role. On the other hand, the influence of the 'gap effect' was found to be almost identical to that observed when targeting only regular full-time workers.

All these results mean that part-time jobs are fairly equally distributed in France and Japan between the sexes.

The same method of analysis applied to the three age groups on the basis of the second model yielded the following empirical results.

Table 9 (in the Appendix) gives the results of the analysis including part-time workers on the under-30 age group. These results are slightly surprising, since some of the factors turned out to have negative effects. In other words, the results of our calculations suggest that in the under-30 age group (including part-timers), the male/female wage gap in France is slightly larger than in Japan, contrary to what all previous analyses have indicated.

The main reason why the wage disparity is greater in France in the youngest age group lies in the 'gap effect' (155.2%). This finding suggests that the school to work transition process is relatively more difficult for girls than boys in France, whereas the situation does not differ very greatly between the sexes in Japan (Ryan 2001).

If we look at the 30-39 age group, table 10 (in the Appendix) shows that if part-timers are included in the model, the impact of the 'observed-X's effect' becomes greater than with

the first model. Among the factors involved in the 'observed-X's effect', both the tenure variable and the academic background variable had a greater influence than with the first model.

Table 11 (in the Appendix) gives the results obtained on the middle age group (40 years plus). In this group, the results did not differ so greatly from those obtained with the first model. Regardless of whether part-timers are included or not in the model, the tenure variable seems to have the greatest explanatory power of all the variables contributing to the 'observed-X's effect'.

Conclusion

The most significant results obtained from our decomposition analysis indicate that a great part of male/female wage gap in Japan could be explained by differences in the way men and women participate to the labour market, while another part remains 'unexplained' in the sense that we can not observe statistically the difference, to put it in other way, that the same attributes are rewarded differently between sexes. In particular, our attention has been drawn to the fact that this type of male/female wage gap widened at the successive stages of Japanese women's life cycle. Very narrow at the first stage, this gap widens after the age of thirties and remains profound until the end of fifties. Contrary to French women, Japanese women's labour supply behaviours are greatly shaped by a series of family events (marriage, birth of children, family care etc).

However, this doesn't mean that Japanese women are more 'traditionalist', 'family-orientated' or 'national culture-dominated' than French counterparts. The fact is that the latter are strongly supported by the French State in the field of childcare (kinder garden, childcare leave, par-time work law etc), family care and job protection legislation, to continue their careers in spite of similar barriers that exist in Japan. Majority of Japanese women wish to better conciliate their professional career and family life (Osawa and Houseman 2003).

If the wage gap is to be reduced further and the women's 'normal' career is to be encouraged, policy issues on both the discrimination and the labour participation must be addressed in parallel.

From the viewpoint of anti-discrimination , it is important to render more effective the monitoring function of current 'equal opportunity law between men and women', as the discriminatory practices against women in workplace remain numerous. Particularly in the Japanese case, the notion of 'equal pay for the 'same' work – in terms of skill, mental or physical requirements and working conditions' is to be reinforced. This could allow to supply the objective basis to any complaint and to generate a 'culture of compliance with equality legislation'. Trade-unions here have a great role to play.

From the point of view of women's labour participation, various actions can be taken on a large range of policy matters. Evidences from our analysis show that the most effective way is to sustain the continuity of their career trajectory. On this issues, the Japanese State needs to go further, to efficiently support working women. In particular, the cost of childcare in Japan being much higher than in other countries, the state has to significantly raise the level of financial aids (tax reductions in connection with childcare) or increase the accommodation capacity of publicly supported day nursery schools, as implemented in France. Parental leave is another issue. Longer leave period than one year - currently in place in Japan[5] - will entitle mothers to better organize the career with family responsibilities. Also, facilitating parental leave among fathers may lead to a more equitable division of home tasks and could have a further equalising impact on male and female participation in the labour market[6].

Finally, firms must be encouraged to create favourable working conditions for

[5] In France, parental leave is allowed for three years with one third of on-going wage level in compensation.

[6] In 2003, 97.1 % of those taking parental leave are women against 2.9% of male workers (Jyosei Koyokanri Kihon Chosa – Female Personal Management Survey – Ministry of Health, Labour and Welfare).

mothers, so that they could assure their career development. Married women's employment may be greatly facilitated by changes in the work organisation such as flexitime, job sharing and short-time work. It is important, of course, to make sure that these flexible working arrangements will not lead women to adopt a 'disadvantaged' employment status or a poor career option. To this regard, the implementation of 'part-time/full-time reversible system at the employee's initiative' could contribute to a great continuity of women's employment.

In short, all these gender issues we have discussed do not constitute a simple moral concern for 'social justice', but correspond to a vital question for the future of Japanese society.

Japan is experiencing two major demographic problems. On the one hand, a drastic fall of birth rate since thirty years accelerates the advent of aging society. On the other hand, Japan is most likely to face a serious labour shortage in the near future. Although universal trend in all OECD countries, these demographic problems seem to be worsened by the 'gender questions specific to Japan'. It is clear that these dilemmas may not be solved without improving the social, economic and family conditions of female workers. All institutional actors (government, firms, trade-union, family etc.) are now invited to renegotiate a new 'social compromise' which takes more account of the women's will. This is the only way to build a 'sustainable long-term development' into the Japanese society.

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Table 2 Descriptive Statistics

Variables	France Men		France Women		Japan Men		Japan Women	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Age	38.671	9.6088	37.1441	9.806	40.2164	11.84845	36.8215	13.15816
Age^2	1587.78	774.3408	1475.85	777.3752	1757.75	988.343	1528.96	1052.478
Tenure	11.776	9.1529	10.6766	8.4844	13.2087	10.26888	8.1453	7.66602
$Tenure^2$	222.45	290.13	185.9738	254.6583	279.92	358.351	125.11	226.46
Education								
High School	0.1026		0.1592		0.5138	0.49981	0.5688	0.49525
Colleage	0.081		0.1355		0.0624	0.24191	0.2171	0.41226
University	0.0823		0.0538		0.2611	0.43921	0.0699	0.2549
Establishment Size								
30～99 employees	0.2203		0.2389		0.261	0.43919	0.2785	0.44827
100～499 employees	0.2726		0.2683		0.2796	0.44878	0.2949	0.456
500～999 employees	0.1399		0.1122		0.0864	0.28092	0.0724	0.25919
1,000 or more employees	0.1271		0.0955		0.1079	0.31022	0.0608	0.23887
Region								
Region1	0.1885		0.1688		0.1044	0.30576	0.1273	0.33336
Region2	0.0587		0.0481		0.2211	0.415	0.2047	0.40349
Region3	0.119		0.1135		0.1572	0.36397	0.1541	0.36105
Region4	0.1014		0.0951		0.1757	0.3806	0.1596	0.36625
Region5	0.1042		0.1067		0.0597	0.23686	0.0659	0.24811
Region6	0.1268		0.1135		0.0239	0.15279	0.0303	0.17148
Region7	0.0806		0.0764		0.085	0.27893	0.1111	0.31425
Industry								
Construction	0.092		0.0155		0.1117	0.31494	0.0439	0.20487
Manufacturing 12	0.0238		0.0256		0.0218	0.14617	0.0408	0.19787
Manufacturing 13	0.0169		0.0111		0.0041	0.06427	0.0034	0.05813
Manufacturing 14	0.0097		0.0181		0.0086	0.09224	0.0202	0.14061
Manufacturing 15	0.0023		0.0191		0.004	0.06343	0.0363	0.1871
Manufacturing 16	0.0066		0.003		0.0062	0.07835	0.0051	0.07096
Manufacturing 17	0.0055		0.0063		0.0061	0.07777	0.0049	0.06948
Manufacturing 18	0.0147		0.0073		0.0092	0.09539	0.0073	0.08515
Manufacturing 19	0.015		0.0162		0.0202	0.14084	0.0147	0.1202
Manufacturing 20	0.0242		0.0207		0.0237	0.15221	0.0151	0.12195
Manufacturing 21	0.0043		0.0014		0.0019	0.0435	0.0006	0.02388
Manufacturing 22	0.0122		0.0115		0.0102	0.10041	0.01	0.09956
Manufacturing 23	0.0117		0.0038		0.0056	0.07495	0.0043	0.06556
Manufacturing 24	0.0037		0.0107		0.0012	0.03448	0.0019	0.04324
Manufacturing 25	0.0171		0.0058		0.0161	0.1257	0.01	0.09938
Manufacturing 26	0.0127		0.0044		0.0158	0.12468	0.0038	0.06155
Manufacturing 27	0.0133		0.0041		0.0072	0.08437	0.0033	0.0574
Manufacturing 28	0.0229		0.0119		0.0242	0.15366	0.0167	0.12813
Manufacturing 29	0.0304		0.0075		0.0434	0.20379	0.0195	0.13835
Manufacturing 30	0.0612		0.0549		0.0646	0.24582	0.0659	0.24816
Manufacturing 31	0.0681		0.0295		0.0485	0.21478	0.0181	0.13324
Manufacturing 32	0.0099		0.008		0.0088	0.09354	0.009	0.09445
Manufacturing33	0.0105		0.0186		0.0058	0.07591	0.0063	0.07941
Public Utilities 36	0.0191		0.0089		0.0073	0.0851	0.0019	0.04351
Public Utilities 37	0.0014		0.0005		0.0018	0.04276	0.0011	0.03274
Public Utilities 39	0.0037		0.0007		0.0038	0.06166	0.0007	0.02596
Transportation 40	0.0577		0.0074		0.0119	0.10856	0.0007	0.02676
Transportation 42	0.0399		0.0106		0.0787	0.26921	0.0146	0.11991
Transportation 43	0.0004		0.0012		0.001	0.03166	0.0007	0.02719
Transportation 44	0.0026		0.0021		0.0014	0.03803	0.0022	0.04638
Transportation 45	0.0073		0.0046		0.0039	0.06212	0.0026	0.05061
Transportation 46	0.0098		0.0158		0.0123	0.11014	0.0078	0.08816
Transportation 47	0.0066		0.0057		0.0212	0.14394	0.0069	0.08275
Wholesale & Retail Trade 52	0.0774		0.0663		0.1096	0.31244	0.1079	0.31025
Wholesale & Retail Trade 53	0.0165		0.0341		0.0105	0.10204	0.0262	0.15973
Wholesale & Retail Trade 55	0.0073		0.0086		0.0109	0.10372	0.0195	0.13843
Wholesale & Retail Trade 56	0.027		0.011		0.0213	0.14449	0.0084	0.09117
Wholesale & Retail Trade 58	0.0227		0.0625		0.0155	0.12349	0.0228	0.14931
Finance & Insurance 66	0.0398		0.0695		0.0311	0.17354	0.045	0.20733
Finance & Insurance 67	0.0108		0.0363		0.0087	0.09264	0.0453	0.20786
Real Estate	0.0083		0.0195		0.0065	0.08006	0.0059	0.07646
Services 72	0.0026		0.0043		0.0033	0.05693	0.0027	0.05167
Services 73	0.0237		0.0297		0.0196	0.1386	0.0291	0.16797
Services 82	0.0029		0.0012		0.0053	0.07234	0.0019	0.04364
Services 84	0.0585		0.0893		0.0239	0.15279	0.0185	0.13486
Services 87	0.0248		0.1192		0.0154	0.12332	0.1176	0.3221
Services 89	0.0023		0.0011		0.0033	0.0577	0.0016	0.03936
Services 90	0.0042		0.0078		0.0182	0.13364	0.0298	0.17015
Services 91	0.0037		0.0057		0.016	0.12539	0.0231	0.15007
Services 92	0.0086		0.0382		0.0038	0.06173	0.0297	0.16964
Services 93	0.0053		0.0064		0.007	0.08326	0.0034	0.05815
Services 95	0.0084		0.0159		0.056	0.22986	0.0609	0.2392

Table 3 Estimated Wage Functions

Variables	France Men		France Women		Japan Men		Japan Women	
	Coefficients	t -value	Coefficients	t -value	Coefficients	t -value	Coefficients	t -value
Constant	3.3206	1144.12	3.4495	552.92	6.097	3058.076	6.497	1137.793
Age	0.042	336.8	0.032	242.12	0.0633	1106.371	0.03194	364.03
Age^2	-0.00039	-256.33	-0.0003193	-196.12	-0.0007294	-1063.332	-0.0004474	-403.742
Tenure	0.00721	120.43	0.00928	130	0.02068	601.851	0.0274	423.346
$Tenure^2$	-0.000011	-6.32	-0.000032	-14.46	-0.00008171	-85.833	-0.00008329	-39.226
Education								
High School	0.2845	567.53	0.1693	341.93	0.08416	349.044	0.132	269.33
Colleage	0.3822	672.91	0.3138	577.32	0.112	275.025	0.229	390.486
University	0.7282	1237.46	0.5804	722.54	0.222	701.385	0.351	477.731
Establishment Size								
30～99 employees	0.0062	14.05	-0.0022	-4.45	0.03591	150.52	0.05632	145.65
100～499 employees	0.0305	67.05	0.0207	41.64	0.09872	405.113	0.133	340.78
500～999 employees	0.0407	72.21	0.0567	85.1	0.156	458.769	0.188	332.903
1,000 or more employees	0.05	82.9	0.042	59.08	0.218	640.712	0.249	400.796
Region								
Region1	-0.177	-361.49	-0.2101	-380.28	-0.202	-599.736	-0.259	-484.84
Region2	-0.2236	-315.92	-0.2231	-260.52	-0.06612	-237.21	-0.106	-226.19
Region3	-0.1595	-287.75	-0.2051	-326.68	-0.07062	-234.758	-0.124	-243.781
Region4	-0.2067	-357.54	-0.2231	-337.29	-0.05307	-181.986	-0.0894	-185.568
Region5	-0.2089	-364.04	-0.2274	-353.86	-0.152	-388.241	-0.21	-322.156
Region6	-0.1616	-300.4	-0.1846	-296.79	-0.193	-341.894	-0.248	-273.887
Region7	-0.1455	-234.73	-0.1758	-246.16	-0.206	-577.078	-0.263	-468.852
Industry								
Construction	-0.2305	-134.36	-0.1116	-19.02	0.04422	26.031	0.04914	8.872
Manufacturing 12	-0.1582	-83.66	-0.1904	-32.81	-0.123	-69.757	-0.205	-37.158
Manufacturing 13	-0.0384	-19.4	-0.047	-7.94	0.104	50.075	0.04787	8.081
Manufacturing 14	-0.257	-116.3	-0.362	-62.01	-0.176	-92.348	-0.273	-48.747
Manufacturing 15	-0.133	-38.29	-0.2733	-46.85	-0.168	-72.472	-0.36	-64.801
Manufacturing 16	-0.2469	-101.44	-0.2061	-31.82	-0.129	-64.745	-0.142	-23.939
Manufacturing 17	-0.1933	-75.19	-0.3054	-50.11	-0.147	-74.651	-0.16	-27.479
Manufacturing 18	-0.0836	-41.27	-0.1658	-27.48	0.01213	6.561	-0.08101	-14.164
Manufacturing 19	-0.0062	-3.03	-0.0243	-4.14	0.02262	12.826	-0.0088	-1.578
Manufacturing 20	-0.0089	-4.71	-0.0391	-6.7	0.08511	48.335	0.05866	10.491
Manufacturing 21	0.2398	86.65	0.0277	3.78	0.265	108.718	0.09889	12.99
Manufacturing 22	-0.1395	-66.37	-0.1925	-32.54	-0.04807	-26.208	-0.109	-19.394
Manufacturing 23	-0.2185	-102.36	-0.2253	-35.54	0.008105	4.136	-0.13	-22.16
Manufacturing 24	-0.2781	-95.44	-0.3228	-54.47	-0.132	-38.548	-0.251	-36.893
Manufacturing 25	-0.1016	-51.41	-0.1155	-18.86	-0.01004	-5.648	-0.06472	-11.41
Manufacturing 26	-0.1598	-76.41	-0.0318	-5.09	0.01834	10.328	-0.01398	-2.375
Manufacturing 27	-0.1156	-55.9	0.0245	3.9	-0.01094	-5.802	-0.0869	-14.699
Manufacturing 28	-0.141	-74.17	-0.1624	-27.5	-0.03841	-21.972	-0.08161	-14.623
Manufacturing 29	-0.0942	-51.22	-0.128	-21.23	-0.02924	-16.997	-0.04361	-7.82
Manufacturing 30	-0.1142	-65.65	-0.1736	-30.18	-0.03062	-17.925	-0.129	-23.405
Manufacturing 31	-0.1505	-87.44	-0.1543	-26.67	0.008868	5.169	-0.0304	-5.443
Manufacturing 32	-0.0958	-43.66	-0.1541	-25.66	-0.0524	-27.694	-0.126	-22.245
Manufacturing33	-0.1414	-65.29	-0.2362	-40.48	-0.02808	-13.766	-0.09346	-16.167
Public Utilities 36	-0.0108	-5.52	-0.0483	-8.07	0.318	170.064	0.27	44.318
Public Utilities 37	-0.0698	-16.65	0.1537	15.73	0.224	94.201	0.132	19.583
Public Utilities 39	-0.0158	-5.4	-0.0695	-8.09	0.316	155.091	0.407	55.016
Transportation 40	-0.0543	-31.17	-0.0377	-6.25	0.156	87.058	0.192	26.838
Transportation 42	-0.2283	-126.88	-0.1726	-29.06	-0.09994	-58.888	-0.03132	-5.597
Transportation 43	-0.1233	-16.84	-0.1375	-18.42	0.06608	21.617	0.06668	9.513
Transportation 44	0.0895	27.19	0.1165	17.11	0.359	123.22	0.445	67.516
Transportation 45	-0.0658	-27.73	-0.0333	-5.34	0.07515	36.377	0.07422	12.498
Transportation 46	-0.0761	-34.33	-0.0322	-5.49	0.04003	22.222	0.06656	11.792
Transportation 47	0.00071	0.29	-0.1106	-17.95	0.183	104.554	0.324	57.382
Wholesale & Retail Trade 52	-0.1011	-58.45	-0.0965	-16.79	0.0279	16.333	0.01667	3.027
Wholesale & Retail Trade 53	-0.1896	-95.19	-0.2194	-37.96	0.01231	6.547	0.01131	2.039
Wholesale & Retail Trade 55	-0.2105	-88.29	-0.261	-43.49	-0.07767	-41.668	-0.105	-18.879
Wholesale & Retail Trade 56	-0.1796	-95.9	-0.1916	-32.3	-0.02005	-11.319	0.01729	3.052
Wholesale & Retail Trade 58	-0.1671	-87.11	-0.1659	-28.84	-0.05414	-29.664	-0.03741	-6.721
Finance & Insurance 66	0.0202	11.26	0.0304	5.3	0.262	150.675	0.192	34.823
Finance & Insurance 67	-0.0054	-2.5	-0.0374	-6.47	0.444	213.446	0.296	52.998
Real Estate	-0.1203	-52.11	-0.1324	-22.67	0.12	57.525	0.08717	15.092
Services 72	-0.1467	-44.32	-0.2302	-36.77	0.04784	21.676	0.0498	8.355
Services 73	-0.2386	-125	-0.2324	-40.08	-0.104	-57.256	-0.05344	-9.612
Services 82	-0.1467	-45.87	-0.1005	-13.37	0.07988	40.999	0.08634	14.068
Services 84	-0.0588	-33.32	-0.0535	-9.32	0.05672	32.172	0.08119	14.597
Services 87	-0.1997	-106.31	-0.143	-24.98	0.152	83.87	0.203	36.895
Services 89	-0.2533	-72.69	-0.1731	-22.62	0.06835	29.389	-0.01014	-1.485
Services 90	-0.0222	-7.96	-0.0469	-7.78	0.0633	34.988	0.0928	16.718
Services 91	-0.224	-76.63	-0.187	-30.45	0.118	62.552	0.192	33.922
Services 92	-0.2378	-104.03	-0.2098	-36.33	0.15	68.01	0.203	36.604
Services 93	-0.0938	-35.92	0.0249	4.09	0.125	64.942	0.108	18.481
Services 95	-0.222	-96.58	-0.2204	-37.54	-0.03075	-17.905	-0.006513	-1.18
$adjR^2$	0.517		0.492		0.616		0.589	

Table4 Factor Analysis of Japan-France Gap in Male-Female Wage Differentials

	Differences	Percentage(%)
Japan-Farnce Gap in Male-Female Wage Differentials	**0.2175**	**100.0**
Observed X's Effect	**0.1441**	**66.3**
Age	0.0330	15.2
Tenure	0.0723	33.2
Education	0.0250	11.5
Establishment Size	−0.0007	−0.3
Industry	−0.0041	−1.9
Region	0.0185	8.5
Observed-Prices Effect	**0.0063**	**2.9**
Age	−0.0055	−2.5
Tenure	0.0122	5.6
Education	0.0116	5.3
Establishment Size	0.0082	3.8
Industry	−0.0221	−10.2
Region	0.0018	0.8
Gap Effect	**0.1046**	**48.1**
Unobserved-Prices Effect	**−0.0375**	**−17.2**
Gender-Specific Effect	**0.2487**	**114.3**
Wage-Structure Effect	**−0.0312**	**−14.3**

Table 5 Factor Analysis of Japan-France Gap in Male-Female Wage Differentials
(Under 30 years olds)

	Differences	Percentage(%)
Japan-Farnce Gap in Male-Female Wage Differentials	**0.0650**	**100.0**
Observed X's Effect	**0.0657**	**101.1**
Age	0.0229	35.2
Tenure	0.0166	25.5
Education	0.0239	36.8
Establishment Size	−0.0010	−1.5
Industry	−0.0080	−12.3
Region	0.0114	17.5
Observed-Prices Effect	**0.0108**	**16.6**
Age	0.0008	1.2
Tenure	−0.0033	−5.1
Education	0.0279	42.9
Establishment Size	0.0014	2.2
Industry	−0.0195	−30.0
Region	0.0035	5.4
Gap Effect	**−0.0029**	**−4.5**
Unobserved-Prices Effect	**−0.0086**	**−13.2**
Gender-Specific Effect	**0.0628**	**96.6**
Wage-Structure Effect	**0.0022**	**3.4**

Table 6 Factor Analysis of Japan-France Gap in Male-Female Wage Differentials (30 to 39 years olds)

	Differences	Percentage(%)
Japan-Farnce Gap in Male-Female Wage Differentials	**0.2310**	**100.0**
Observed X's Effect	**0.0753**	**32.6**
Age	0.0011	0.5
Tenure	0.0370	16.0
Education	0.0258	11.2
Establishment Size	−0.0001	0.0
Industry	−0.0090	−3.9
Region	0.0204	8.8
Observed-Prices Effect	**−0.0568**	**−24.6**
Age	0.0000	0.0
Tenure	−0.0078	−3.4
Education	−0.0132	5.7
Establishment Size	0.0084	3.6
Industry	−0.0442	−19.1
Region	0.0001	0.0
Gap Effect	**0.2201**	**95.3**
Unobserved-Prices Effect	**−0.0076**	**−3.3**
Gender-Specific Effect	**0.2954**	**127.9**
Wage-Structure Effect	**−0.0644**	**−27.9**

Table 7 Factor Analysis of Japan-France Gap in Male-Female Wage Differentials (40 years olds and over)

	Differences	Percentage(%)
Japan-Farnce Gap in Male-Female Wage Differentials	**0.2880**	**100.0**
Observed X's Effect	**0.1601**	**55.6**
Age	0.0028	1.0
Tenure	0.0849	29.5
Education	0.0244	8.5
Establishment Size	0.0086	3.0
Industry	0.0110	3.8
Region	0.0284	9.9
Observed-Prices Effect	**−0.0141**	**−4.9**
Age	−0.0006	−0.2
Tenure	0.0107	3.7
Education	−0.0134	−4.7
Establishment Size	0.0135	4.7
Industry	−0.0276	−9.6
Region	0.0033	1.2
Gap Effect	**0.1972**	**68.5**
Unobserved-Prices Effect	**−0.0552**	**−19.2**
Gender-Specific Effect	**0.3573**	**124.1**
Wage-Structure Effect	**−0.0693**	**−24.1**

Table 8 Factor Analysis of Japan-France Gap in Male-Female Wage Differentials (Including part time workers)

	Differences	Percentage(%)
Japan-Farnce Gap in Male-Female Wage Differentials	**0.2460**	**100.0**
Observed X's Effect	**0.1813**	**73.7**
Age	0.0185	7.5
Tenure	0.0744	30.2
Education	0.0405	16.5
Establishment Size	0.0006	0.2
Industry	0.0268	10.9
Region	0.0148	6.0
Part	0.0057	2.3
Observed-Prices Effect	**-0.0062**	**-2.5**
Age	-0.0044	-1.8
Tenure	0.0150	6.1
Education	0.0097	3.9
Establishment Size	0.0101	4.1
Industry	-0.0603	-24.5
Region	0.0006	0.2
Part	0.0231	9.4
Gap Effect	**0.1163**	**47.3**
Unobserved-Prices Effect	**-0.0453**	**-18.4**
Gender-Specific Effect	**0.2976**	**121.0**
Wage-Structure Effect	**-0.0515**	**-20.9**